BASIC ALGEBRA EXAM 3 FORM GR NAME _____

Show all work on this test or on separate paper.
Turn in all work sheets. Reduce all answers to lowest terms

In 1–8, perform the indicated operations and reduce fractions completely:

1. $\frac{21}{98} =$

2. $\frac{48x^3y^6}{36x^5y^3} =$

3. $\frac{x^2-4x}{x^2-16} =$

4. $\frac{5x^2-20x}{8-2x} =$

5. $\frac{x^2-8x+16}{x^2-3x-10} \cdot \frac{x^2-4}{x^2-5x+4} =$

6. $\frac{4x-8y}{x^2y^4} \div \frac{x^2-3xy+2y^2}{4x^4y^2} =$

7. $\frac{6a^2-a-7}{12a^2+16a-35} = \frac{(6a\ )(\quad)}{}$

8. $\frac{5-x}{x^2-25} =$

In 9–12, find the LCD only (Justify for partial credit)

9. $\frac{1}{9}, \frac{1}{10}$

10. $\frac{1}{9}, \frac{1}{10}, \frac{1}{25}$

11. $\frac{1}{x^2-3x}, \frac{1}{x^2-4x+3}$

12. $\frac{1}{x^2-10x+25}, \frac{1}{x^2-25}$

13–20, add or subtract and reduce completely:

13. $\frac{5}{12} + \frac{7}{20}$

14. $\frac{x^2}{x^2-4x} + \frac{4x}{x^2-4x}$

15. $\frac{3x^2+4x}{x+2} - \frac{2x^2-4}{x+2}$

16. $\frac{7}{8x} + \frac{5}{16y}$

17. $\frac{5}{2x^2} - \frac{3}{x}$

18. $\frac{1}{x^2-9} + \frac{1}{x^2-5x+6}$

19. $\frac{x}{x^2+4x+3} - \frac{4}{x^2-3x-4}$

20. $\frac{3x^2-4}{2x(x-2)} - \frac{x}{x-2} - \frac{3}{2x}$

In 21–25, solve for x:

21. $\frac{x}{x-2} = \frac{4}{5}$

22. $\frac{4}{x} = \frac{x-2}{2}$

23. $\frac{x}{3} - \frac{x+2}{2} = 1$

24. If 15 apples cost $2.95, how much would you expect to pay for 50 apples? (Give equation!)

25. If a 12 ounces bag of potato chips costs $1.50, how many ounces would you expect to buy for $10? (Give equation!)

BASIC ALGEBRA – EXAM 3 GR Solutions

1. $\frac{21}{98} = \boxed{\frac{3}{14}}$

2. $\frac{48x^3y^6}{36x^5y^3} = \boxed{\frac{4y^3}{3x^2}}$

3. $\frac{x^2-4x}{x^2-16} = \frac{x(x-4)}{(x-4)(x+4)} = \boxed{\frac{x}{x+4}}$

4. $\frac{5x^2-20x}{8-2x} = \frac{5x(x-4)}{2(4-x)} = \boxed{\frac{-5x}{2}}$

5. $\frac{x^2-8x+16}{x^2-3x-10} \cdot \frac{x^2-4}{x^2-5x+4} = \frac{(x-4)(x-4)}{(x-5)(x+2)} \cdot \frac{(x-2)(x+2)}{(x-4)(x-1)} = \boxed{\frac{(x-4)(x-2)}{(x-5)(x-1)}}$

6. $\frac{4x-8y}{x^2y^4} \div \frac{x^2-3xy+2y^2}{4x^4y^2} = \frac{4(x-2y)}{x^2y^4} \cdot \frac{4x^4y^2}{(x-2y)(x-y)} = \frac{16x^4y^2}{x^2y^4(x-y)} = \boxed{\frac{16x^2}{y^2(x-y)}}$

7. $\frac{6a^2-a-7}{12a^2+16a-35} = \frac{(6a-7)(a+1)}{(6a-7)(2a+5)} = \boxed{\frac{a+1}{2a+5}}$

8. $\frac{5-x}{x^2-25} = \frac{-1}{(x-5)(x+5)} = \boxed{\frac{-1}{x+5}}$

9. $\frac{1}{9}, \frac{1}{10}$ $\quad 3^2 \quad 2\cdot5$ $\quad LCD = 2\cdot5\cdot3^2 = \boxed{90}$

10. $\frac{1}{9}, \frac{1}{10}, \frac{1}{25}$ $\quad 3^2 \quad 2\cdot5 \quad 5^2$ $\quad LCD = 2\cdot3^2\cdot5^2$

11. $\frac{1}{x^2-3x}, \frac{1}{x^2-4x+3}$ $\quad x(x-3) \quad (x-3)(x-1)$ $\quad \boxed{LCD = x(x-3)(x-1)}$

12. $\frac{1}{x^2-10x+25}, \frac{1}{x^2-25}$ $\quad (x-5)^2 \quad (x-5)(x+5)$ $\quad \boxed{LCD = (x-5)^2(x+5)}$

13. $\frac{5\cdot5}{125} + \frac{7\cdot3}{20\cdot3} = \boxed{450}$ $\quad = \frac{25+21}{60} = \frac{46}{60} = \boxed{\frac{23}{30}}$

14. $\frac{x^2}{x^2-4x} + \frac{4x}{x^2-4x} = \frac{x^2+4x}{x^2-4x} = \frac{x(x+4)}{x(x-4)} = \boxed{\frac{x+4}{x-4}}$

15. $\frac{3x^2+4x}{x+2} - \frac{2x^2-4}{x+2} = \frac{3x^2+4x-2x^2+4}{x+2} = \frac{x^2+4x+4}{x+2} = \frac{(x+2)^x}{x+2} = \boxed{x+2}$

16. $\frac{7\cdot2y}{8x\cdot2y} + \frac{5x}{16yx} = \boxed{\frac{14y+5x}{16xy}}$

17. $\frac{5}{2x^2} - \frac{3\cdot2x}{x\cdot2x} = \boxed{\frac{5-6x}{2x^2}}$

18. $\frac{1}{(x-3)(x+3)}\frac{(x-2)}{(x-2)} + \frac{1}{(x-2)(x-3)(x+3)}\frac{(x+3)}{(x+3)} = \frac{x-2+x+3}{(x-2)(x-3)(x+3)} = \boxed{\frac{2x+1}{(x-2)(x-3)(x+3)}}$

19. $\frac{x(x-4)}{(x+3)(x+1)}\frac{(x-4)}{(x-4)} - \frac{4}{(x-4)(x+1)}\frac{(x+3)}{(x+3)} = \frac{x^2-4x-4x-12}{(x+3)(x+1)(x-4)} = \boxed{\frac{x^2-8x-12}{(x+3)(x+1)(x-4)}}$

20. $\frac{3x^2-4}{2x(x-2)} - \frac{x(2x)}{(x-2)(2x)} - \frac{3(x-}{2x(x-}$ $= \frac{3x^2-4-2x^2-3x+6}{2x(x-2)} = \frac{x^2-3x+2}{2x(x-2)} = \frac{(x-1)(x-2)}{2x(x-2)} = \boxed{\frac{x-1}{2x}}$

21. $\frac{x}{x-2} = \frac{4}{5}$ $\quad 5x = 4x-8$ $\quad \boxed{x=-8}$

22. $\frac{4}{x} = \frac{x-2}{2}$ $\quad x(x-2) = 8$ $\quad x^2-2x-8=0$ $\quad (x-4)(x+2)=0$ $\quad \boxed{x=4 \quad x=-2}$

23. $\frac{2}{3}\left(\frac{x}{3}\right) - \frac{6}{3}\left(\frac{x+2}{x}\right) = \frac{6}{6}(1)$ $\quad 2x-3x-6=6$ $\quad -x=12$ $\quad \boxed{x=-12}$

24. $\frac{15}{2.95} = \frac{50}{x}$ $\quad 15x = 2.95(50)$ $\quad x = \frac{2.95(50)}{15} = \boxed{9.83}$

25. $\frac{12}{1.50} = \frac{x}{10}$ $\quad 1.50x = 120$ $\quad \boxed{x=80 \text{ mg}}$